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# **ENVIRONMENTAL ASSESSMENT**

**FOR THE  
Buffalo Hills Complex Wild Horse Capture Plan**  
EA Number NV-020-05-02

**Winnemucca Field Office, Nevada BLM  
Humboldt County, Nevada**



**Cremello stud, Granite Peak, Granite Range Herd Management Area (March 2004)**

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## 1.0 INTRODUCTION

### 1.1 Background Information

The Bureau of Land Management (BLM) Winnemucca Field Office (WFO) is proposing to capture about 1,531 wild horses (90% of current population estimates) and remove about 1,236 excess wild horses from the Buffalo Hills Complex. This complex is composed of the Buffalo Hills (NV-220), Fox-Lake Range (NV-228), and Granite Range (NV-221) Herd Management Areas (HMAs). For reader convenience, the Buffalo Hills Complex will be referred to as BHC throughout the remainder of this document. The proposal also includes capturing and removing approximately 38 wild horses from outside the BHC in the adjoining Coyote Allotment. Horses in this area are outside of the HMA in an area not managed for wild horses. Also proposed is implementing a fertility control treatment on about 148 mares expected to be released back into their respective HMAs following the gather.

The gather is proposed to start in mid-January 2005 and is anticipated to last about six weeks. Past capture, census, and distribution data indicate some inter-movement of horses between these HMAs, however wild horse population modeling for this environmental analysis (EA) was modeled by HMA to assess herd viability at a smaller scale.

The BHC is located 80 miles north of Reno and 100 miles west of Winnemucca, within Washoe County, Nevada. The Complex is approximately 414,200 acres in size. Refer to Map 1 (Buffalo Hills Complex Map) for additional location information. HMAs within the BHC are north of the Pyramid Lake Paiute Reservation and near the small community of Gerlach, Nevada.

Appropriate Management Level (AML) is defined as the number of wild horses that can be sustained within a designated HMA which achieves and maintains a thriving natural ecological balance keeping with the multiple-use management concept for the area. AML's for the Buffalo Hills, Fox-Lake Range, and Granite Range HMAs were established through allotment evaluations and Final Multiple Use Decisions (FMUDs) for the Buffalo Hills (2/93), Pole Canyon (4/00), and Rodeo Creek (12/97) Allotments (Table 1). AML was further defined in the Buffalo Hills Complex Capture Plan & EA, EA No. NV-020-00-50 (November 2000).

**Table 1. BHC Appropriate Management Level Range.**

Allotment	HMA	AML Range (Low-High)
Buffalo Hills	Buffalo Hills	188 to 314 head
Buffalo Hills	Granite Range	155 to 258 head
Pole Canyon	Fox-Lake Range	0 head
Rodeo Creek	Fox-Lake Range	122 to 204 head
	<b>Total Complex AML Range</b>	<b>465 to 776 head</b>

Excess wild horses were last gathered in the BHC in 2001 and 2002. Funding and other issues prevented them from being gathered as a Complex at that time. The Fox-Lake Range HMA and northern portion of the Granite Range HMA were last gathered in January 2001. The Buffalo Hills HMA and southern portion of the Granite Range HMA were last gathered in February 2002. The above-mentioned gathers only reduced populations to the high AML range in order to comply with a December 19, 2001 court order issued by the Federal District court in Washington

D.C. implementing terms of a joint stipulation agreement by the Fund For Animals (FFA) and the United States. In addition to animals not captured during the 2001 and 2002 gather operations, 324 horses were released back to the range (258 mares and 66 studs). Two hundred and forty-seven mares were treated with a one year immunocontraceptive. Data to assess the effectiveness of the applied fertility control treatment would be compiled from capture data and used in future planning evaluations. However, a reproduction rate of 19% (foals/adults) was field observed in early May 2004 in the Buffalo Hills HMA.

The Fox-Lake Range and Granite Range (north) HMA's were aerially censused in August 2001 with 352 and 392 head counted, respectively. The Buffalo Hills and Granite Range (south) HMA's were aerially censused in October 2002 with 358 and 71 head counted, respectively. Census counts were grown by a population growth rate of 15% per year to calculate the current population estimates. Thirty-eight head have been reported (based on 2004 field observations) outside the BHC in the Coyote Allotment. Therefore, the current estimated wild horse population is 1,739 head (Table 2) or 374% higher than the total low range AML (Table 1).

**Table 2. Current Wild Horse Population Estimates.**

HMA	Number of Horses
Buffalo Hills	474
Fox-Lake Range	536
Granite Range	691
Outside HMA/Coyote Allotment	38
<b>Total</b>	<b>1,739</b>

Climate predictions from the NOAA 2004-2005 Winter Outlook "indicate some improvement in drought conditions in the West, but long-term drought is expected to persist through the winter in many areas" (<http://www.noaanews.noaa.gov/stories2004/s2326.htm>, 10/14/04). The Palmer Drought Severity Index for northwest Nevada is currently rated as "extreme." Recorded annual precipitation totals in the Gerlach area have been below average since 1999. The annual total 2004 precipitation amount reported for Gerlach was two inches, only 25% of the annual average of eight inches (<http://www.wrcc.dri.edu/cgi-bin/cliMONtpre.pl?nvgerl>, 10/14/04). On October 19<sup>th</sup>, 2004 the State of Nevada was declared to be in an emergency status due to prolonged drought conditions by the President of the United States.

In addition to the population estimates and drought situation identified above, analysis of 2003 and 2004 field monitoring data (horse observations, vegetative, and riparian) demonstrate an excess of wild horses in the BHC. Current Multiple-Use Decisions identify allowable annual upland utilization for wild horses in key areas within the Buffalo Hills allotment at 60% and at 40% for riparian areas by February 28<sup>th</sup>. Allowable upland utilization for wild horses in livestock rest pastures is 20% and 15% for riparian areas by July 15<sup>th</sup>. The combined allowable upland utilization for wild horses and cattle in key areas within the Rodeo Creek Allotment is 50-60% and 50% for riparian areas by February 28<sup>th</sup>.

Measurements of upland and riparian utilization on key forage species range from light to heavy (21-80%) with combined cattle/horse use (Photo 1), but also with horse use only in livestock rest pastures (Photo 2). Wildlife utilization of grasses is minimal, but more significant on browse

and forb species due to foraging preferences. The Rodeo Creek livestock operator (Fox-Lake Range HMA) took voluntary non-use in June 2004 due to depleted range conditions.



**Photo 1. Upland utilization, combined use, Fox-Lake HMA (Aug 04)**



**Photo 2. Upland/riparian utilization, horse only, Granite HMA (Oct 03).**

Browse and less desirable forage species exhibit light to heavy use (21-80%)(Photo 3) as more desirable grasses become scarce in the Fox-Lake Range HMA. Trampling damage and heavy trailing by wild horses and livestock is evident at most riparian and water development locations there as well (Photo 4), but also occur throughout the BHC.



**Photo 3. Browse utilization, combined use (Aug 04).**



**Photo 4. Riparian trampling, combined use (Aug 04).**

Riparian utilization levels range from moderate to severe (41-100%) and riparian stubble heights are sometimes less than 1 inch (Photo 2 [horse only], Photo 5 [horse and cattle]) if present at all. Many springs/seeps show severe hummocking or the vertical displacement of riparian soils

caused by hoof depressions and freeze/thaw cycles (Photo 6). Hummocking increases riparian soil exposure and loss of ground cover limiting the functionality of the site to hold water. Water production is further reduced by drought conditions (Photo 7) and animals are often trailing long distances for water. Dirt water catchments have had little opportunity to fill due to decreased precipitation amounts and most seasonal waters dried up early in the year. Distribution of available waters dramatically changes grazing use areas as forage is depleted near remaining waters. Trailing and soil impacts increase as animals trail longer distances between forage and water sites.



**Photo 5. Riparian utilization, combined use (Aug 04).**



**Photo 6. Severe hummocking, combined use (Mar 04).**

There is concern about limited water available to wild horses, livestock, and wildlife due to continuing drought; heavy use and trampling of forage near available water; and, competition between wild horses, livestock, and wildlife for limited forage and water. Fire rehab specialists are concerned about concentrated horse use in recent wildfire burns. Livestock can be moved or managed to reduce grazing impacts on burned areas, but horses tend to congregate on them. Burned areas are highly desired by grazing animals because of new forage growth (Photo 8). If burned areas are grazed heavily and repeatedly prior to the reestablishment of desired plant communities, the potential for weed invasion increases, and the probability of successful rehabilitation decreases.



**Photo 7. Spring site, Buffalo Hills (May 04).**



**Photo 8. 2002 Tin Canyon burn, Buffalo Hills (May 04)**

Upland utilization levels by wild horses have been recorded as high as 70% in livestock rest pastures by mid-August. Actual use in the BHC by wild horses is exceeding allowable levels by 10-40% (in excess of livestock utilization levels). Over-utilization and trampling in key areas is currently impacting plant productivity and health. Desirable grass species are particularly vulnerable due to long-term drought-related stress and reduced vegetative production. Wild horses, due to their free-roaming nature and preferred foraging areas, may graze individual plants numerous times during a growing season, reducing plant vigor, seed production, and potential for re-growth. Horses can remove more material per plant than other ungulates, due to having both upper and lower incisors. Primary native bunch grasses are scarce in lower elevation range sites in the Fox-Lake Range. Throughout the BHC, riparian assessments in 2003 and 2004 indicate the majority of sites are “functioning at risk” some with a downward trend; riparian utilization monitoring data shows utilization levels above management objectives for both combined (cattle, horses, wildlife) and horse use only areas. This data, together with a recent review of the analysis which established AML for the HMA, indicates that the current AML of wild horses is appropriate and that a current excess of wild horses exists.

## **1.2 Need for the Proposal**

Wild horse population estimates and analysis of vegetative and horse observation monitoring data from the 2003 and 2004 field seasons demonstrate an excess of wild horses in the BHC. Current population estimates are 1,739 head. The established low range of AML is 465 head and the high range is 776 head. Current populations are double the high AML and almost four times the low AML. Prolonged drought, light to heavy (severe near limited water sources) utilization, reduced forage production (cheat grass conversion, recent fires, weed infestations), and inadequate body condition levels (Photos 9, 10) could cause a large loss of wild horses and wildlife this winter. Horses observed in the field range from very thin to moderate. Lactating mares, older animals, and growing juveniles display thinner body conditions than do dry mares and bachelor band studs, especially last winter. Lack of a snow pack (mild winter) this year would allow horses to remove almost all of the residual plant material affecting potential vegetative production this spring and thus likely cause an emergency situation. Conversely, a heavy snow pack (severe winter) this year would cause a high mortality rate because the amount of forage available would not sustain high horse numbers and many horses would perish this winter.



**Photo 9: Very thin Fox-Lake mare, (Mar 04).**



**Photo 10: Thin Granite Range mare, (Mar 04).**

The Proposed Action is needed to remove about 1,274 wild horses in January 2005 to restore wild horse herd numbers to levels consistent with AML, including thirty-eight horses outside the BHC in the Coyote Allotment. Applying fertility control measures as part of the Proposed Action would slow the reproduction rate of mares returned to the HMAs, resulting in fewer animals removed from the range over time. This would decrease long-term holding and adoption costs associated with excess animals. Decreased forage demands on drought-stressed resources should result in improved wild horse body conditions. Lower horse densities and slower rates of population growth would allow vegetative resources, riparian areas, and other natural resources time to rest and recover from forage utilization, water usage, and hoof impacts.

Over-utilization and resource damage is occurring and is likely to continue to occur without immediate action. Livestock use has remained relatively constant and is in compliance with permitted grazing systems that have provided periodic rest and deferment of key range sites from livestock. The Buffalo Hills Allotment rests pastures two years and the Rodeo Creek Allotment rests seasonally from livestock grazing. Horse observations indicate a lack of sufficient body condition in some herds, especially to survive winter conditions. The proposed capture and removal is needed at this time to reduce wild horse grazing impacts and utilization levels to balance use with other multiple-uses and with the productive capacity of the habitat; and, to improve the health of remaining self-sustaining wild horse populations as authorized under Section 3(b) (2) of the 1971 Free-Roaming Wild Horses and Burros Act and section 302(b) of the Federal Land Policy and Management Act of 1976.

### **1.3 Conformance with Existing Land Use Plans (LUPs)**

The Proposed Action is subject to the Sonoma-Gerlach Resource Area Management Framework Plan (MFP) Record of Decision (ROD), approved on July 9th, 1982. Applicable decisions and goals are: to manage sustainable populations of wild horses, maintain a thriving ecological balance, and to maintain free-roaming behavior. The Proposed Action has been determined to be in conformance with this plan as required by regulation (43 CFR 1610.5-3(a)). The BHC has been designated as suitable for long-term sustained wild horse use in the 1982 Sonoma-Gerlach Resource Area Management Framework Plan.

### **1.4 Conformance with Rangeland Health Standards**

The affected allotments have not been assessed for conformance with Rangeland Health Standards and Guidelines. However, the Buffalo Hills allotment is tentatively scheduled for a Rangeland Health assessment in 2005.

### **1.5 Relationship to Statutes, Regulations, or Other Plans**

The Proposed Action is in conformance with the Wild Free-Roaming Horse and Burro Act of 1971 (PL 92-195 as amended) and with all applicable regulations at 43 CFR (Code of Federal Regulations) 4700 and policies.

The carrying capacity for livestock, wildlife and wild horses; multiple-use management objectives; and, the Terms and Conditions for livestock grazing within the Buffalo Hills, Pole Creek, and Rodeo Creek Allotments were established in conformance with the Land Use Plan,

BLM policy, and the Sierra Front-Northwest Great Basin Resource Advisory Council Area Standards and Guidelines (RAC).

Environmental analyses (EA) have been conducted in past years which analyzed the impacts of various gather methods on wild horses and other critical elements of the human environment. The following documents are available for public review at the Winnemucca Field Office:

- 1) Buffalo Hills-South Granite Range Complex Capture Plan & EA. EA No. NV-020-02-10, January 2002.
- 2) Buffalo Hills Complex Capture Plan & EA. EA No. NV-020-00-50, November 2000.
- 3) Programmatic EA, Wild Horse Fertility Control Research, EA No. NV-020-00-02, November 1999.
- 4) Fox & Lake Emergency Gather EA, EA No. NV-020-03-14, January 1993.
- 5) Buffalo Hills/Granite Range Horse Gather EA. EA No. NV-020-03-15, January 1993.
- 6) Winnemucca District Wild Horse/Burro Removal Programmatic Environmental Assessment, EA No. NV-020-7-24, August 1987.
- 7) Fox & Lake Range Wild Horse Gather Plan EA. EA No. NV-020-5-13, March 1985.
- 8) Buffalo Hills, Granite Range, and Calico Mtns HMA's Wild Horse Gathering Plan EA. EA No. NV-020-5-15, March 1985.

## **1.6 Issue Identification**

The following concerns are identified as a result of public and internal scoping concerning the proposed removal of wild horses from the BHC:

- ❖ Range conditions and wild horse populations are similar to 1992/93 when winter horse mortality rates were high;
- ❖ Wild horse (horse only) utilization is exceeding allowable levels by 10-40% in combined use (cattle and horses) pastures and livestock rest pastures;
- ❖ Six years of consecutive drought have decreased plant health, vigor, and forage production;
- ❖ Horse impacts affect recovery efforts on four Lahontan cutthroat trout (LCT) recovery streams, two classified as “functioning at risk, static trend”;
- ❖ Field observed body conditions suggest reduced herd health and viability, especially coming out of last winter;
- ❖ High horse densities are limiting the success of rehabilitation efforts on the Tin Canyon and Bull Basin wildfire burns;
- ❖ Recent aerial riparian assessments (2003-2004) classified the majority of riparian areas in the BHC as “functioning at risk, downward trend”;
- ❖ Wild horse densities contribute to horses moving outside the BHC along highway corridors, posing a safety risk to highway travelers and to wild horses (Photo 11);
- ❖ Over-utilization contributes to the loss of and/or the reduced health, density, and vigor of native bunch grasses and browse species, encouraging weed infestation and conversion of desirable plant communities to undesirable plant communities;
- ❖ Heavy trailing impacts due to animals traveling between forage and limited water sites have contributed to reduced vegetative cover, loosening of topsoil, increased erosion, and hummocking (reduced functionality) of riparian areas;

- ❖ Wild horse populations are not in balance with established AMLs or with the land's current ability to sustain and provide habitat for them and for other multiple-uses of the land to achieve a "thriving natural ecological balance."



Photo 11: Wild horse band crossing the county road near Gerlach (Mar 04).

## 2.0 ALTERNATIVES

This chapter describes the Proposed Action and alternatives, including any that were considered but eliminated from detailed analysis. Alternatives analyzed in detail include the following:

- Alternative 1: Proposed Action (Gather to Low Range AML with Fertility Control)
- Alternative 2: Gather to Low Range AML without Fertility Control
- Alternative 3: No Action (Delay Gather/Removal of Wild Horses)

Alternatives 1 and 2 were developed based on the need to remove excess animals in order to manage the range in a thriving natural ecological balance and multiple-use relationship, to prevent rangeland health deterioration, and to insure healthy self-sustaining wild horse populations. In addition, these alternatives address the concern over the current state of the environment as evidenced by monitoring and other data (presented previously). The application of fertility control is analyzed to determine cost effectiveness and affects on population growth. The management objective is to reduce gather frequency and herd disturbance yet maintain herd viability and sustainability. Alternative 3 does not comply with the 1971 Act nor meet the purpose and need for this action. However, it is included as a basis for comparison and for assessment of the impacts in the event a gather does not occur at this time.

### 2.1 Actions Common to Alternatives 1 and 2

The following actions are common to both Alternatives 1 and 2:

- Gather operations would be conducted in accordance with the Standard Operating Procedures (SOPs) described in the Nevada Wild Horse Gather Contract, Appendix A. The helicopter drive method would be used for this gather and would include multiple gather sites (approximately nine). To the extent possible, gather sites (traps) would be

located in previously disturbed areas and released animals would be returned to the same general area from which they were gathered.

- The BLM would be responsible for compliance whether a contractor or BLM personnel conduct the gather.
- Wild horses selected for release back into the BHC would adhere to the National Selective Removal Policy in accordance with the *Gather Policy and Selective Removal Criteria for Wild Horses, Washington Office IM 2002-095*. The selective removal priorities are:

**a. Age Class Five Years and Younger:** “Wild horses five years of age and younger may be removed and placed into the national adoption program.”

**b. Age Class Ten Years and Older:** “Wild horses ten years of age and older may be removed and placed into long-term holding.”

**c. Age Class Six to Nine Years:** “Wild horses aged six to nine years old should be removed last and only if the HMA cannot achieve AML without their removal.”

The National selective removal criteria would be followed to the extent possible. However, it is anticipated that animals from younger and/or older categories would need to be released to meet management objectives and to maintain a desired age class structure. To enhance the selection process, more animals than required by the selected alternative would initially be separated for release. A final sorting would then be completed to select the exact animals for release. In the event that a certain number of wild horses evade capture and have been confirmed by the BLM, the total number of animals released may be reduced by this number.

- Blood samples would be acquired to monitor genetic health and diversity. Other data including sex and age distribution, reproduction, body condition, color, size, etc. may also be recorded, along with the disposition of that animal (removed or released).
- Excess wild horses would be sent to Bureau facilities for adoption or long-term holding.

## **2.2 Proposed Action and Alternatives**

### **2.2.1 Proposed Action (Gather to Low Range AML with Fertility Control)**

Alternative 1, the Proposed Action, would continue implementation of a population management strategy for the Buffalo Hills, Granite Range, and Fox-Lake Range HMAs in which wild horses would be managed in an AML range from 465 to 776 head. The Proposed Action would be to capture about 1,569 animals, remove about 1,274 wild horses, and release about 295 horses back into their respective HMAs. These numbers include capturing and removing approximately 38 horses outside the HMAs in the Coyote Allotment. Also proposed is conducting immuno-contraceptive research and monitoring the results as appropriate. About 148 breeding age mares (50% of release animals) selected for release back to the range would be treated with Porcine

zona pellucida (PZP) vaccine. This application would reduce fertility of treated mares for two breeding seasons. Standard Operating Procedures (SOPs) regarding the use of PZP, as outlined in Appendix B, would be utilized. The BLM would be responsible for monitoring and compliance with these SOPs.

## **2.2.2 Gather to Low Range AML without Fertility Control**

Alternative 2 would continue implementation of a population management strategy for the Buffalo Hills, Granite Range, and Fox-Lake Range HMAs in which wild horses would be managed in an AML range from 465 to 776 head. This alternative would be to capture about 1,569 animals, remove about 1,274 wild horses, and release about 295 horses back into their respective HMAs. These numbers include capturing and removing approximately 38 horses outside the HMAs in the Coyote Allotment. However, with this alternative, immuno-contraceptive research to slow the reproductive rate of breeding age mares released back to the range would not be conducted.

## **2.2.3 No Action Alternative (Delay Gather/Removal of Wild Horses)**

Alternative 3, No Action, would continue existing management and excess wild horses would not be gathered at this time. Wild horse populations are reported to increase by 18-25 percent or more per year. Populations may eventually reach equilibrium by regulating their numbers through periodic elevated mortality rates caused by drought, insufficient forage, water and/or space availability, disease, predation, or a combination of these environmental factors. Or, a management action to reduce herd numbers may be evaluated and implemented at another time, possibly due to an emergency situation.

## **2.3. Alternatives Considered but Eliminated from Further Analysis**

Gathers to the upper limit of the population range with and without fertility control were also considered; however, implementation of these alternatives would not likely provide adequate relief on drought-stressed natural resources, especially given the severity and length of the current drought cycle (6 consecutive years) and the potential for high winter mortality rates.

## **3.0 AFFECTED ENVIRONMENT/ENVIRONMENTAL IMPACTS**

This chapter describes the affected environment and will assess the environmental impacts on the components of the human environment either affected or potentially affected by the Proposed Action and alternatives.

Table 3 below summarizes the presence of the critical elements of the human environment and other resources of concern within the project area. Elements marked as **Present** – “Yes” are discussed in the corresponding referenced section below. One element marked “pending” is not discussed as a response from the potentially affected parties has not yet been received.

**Table 3. Summary of Critical and Other Elements of the Human Environment.**

Element	Present	Affected	Reference Section
Air Quality	No	No	--
Areas of Environmental Concern	No	No	--
Cultural Resources	Yes	Yes	3.2
Environmental Justice	No	No	--
Floodplains	No	No	--
Invasive, Non-native Species	Yes	Yes	3.3
Livestock Grazing	Yes	Yes	3.4
Migratory Birds	Yes	Yes	3.5
Native American Religious Concerns	pending	pending	pending
Prime/Unique Farmlands	No	No	--
Recreation	Yes	Yes	3.6
Special Status Species	Yes	Yes	3.7
Vegetation	Yes	Yes	3.8
Waste, Hazardous or Solid	No	No	--
Water Quality (Surface & Ground)	Yes	Yes	3.9
Wetland/Riparian Zones	Yes	Yes	3.9
Wild Horses	Yes	Yes	3.1
Wild & Scenic Rivers	No	No	--
Wilderness/Wilderness Study Area (WSA)	Yes	Yes	3.10
Wildlife	Yes	Yes	3.11

### **3.1 Wild Horses**

#### **Affected Environment**

##### **3.1.1 Buffalo Hills HMA (NV-220)**

The Buffalo Hills HMA (approx. 132,400 acres) located within the Buffalo Hills Allotment (Map 1), is designated as about 93% public and 7% private lands. The east and south sides of the HMA are unfenced and horses can move to the Granite Range or Fox-Lake Range HMAs, although they have to cross major roadways. The terrain consists of a circular-shaped basaltic plateau dominated by large, rugged, rocky canyons. Elevations range from 3,823 feet along the Smoke Creek Desert to 6,832 feet at Poodle Mountain. Climate is characterized by warm dry days, cool nights, and annual precipitation amounts that range from 4 to 6 inches at lower elevations to about 12 inches at higher elevations.

Numerous dirt catchments (relying on annual runoff events) provide drinking water, developed waters are minimal and perennial waters are few. Cattle use is rotated between two consecutive years of grazing and two consecutive years of rest with grazing occurring from April to mid-July. There are no interior pasture fences.

Vegetation varies from salt desert shrub communities at lower elevations to big sagebrush/bunch grass communities at higher elevations. Typical species at lower elevations include shadscale, bud sage, winterfat, black greasewood, squirreltail, and Sandberg's bluegrass. Species typical in higher elevations include low sage, Wyoming sagebrush, mountain big sagebrush, bitterbrush,

rabbitbrush, Utah juniper, needlegrass, blue bunch wheatgrass, basin wildrye, squirreltail, Indian paintbrush, and phlox.

Approximately 1,000 acres (Tin Canyon Fire) burned near Poodle Mountain in 2002. Rehabilitation costs (\$42,000) have included natural regeneration and monitoring. The Poodle Mountain (NV-020-12) Wilderness Study Area (WSA) is located within the HMA as displayed on Map 1.

The HMA is managed for an AML range from 188 to 314 head as established in the 1993 FMUD and EA# NV-020-00-50. The current population is estimated at 474 head (397% over the low range AML). Refer to section 1.1 Background Information for additional details.

Horses are descendants of ranch horses and cavalry remounts. Based on 2002 capture data, horses exhibit bay (61%), sorrel (21%), brown (6%), or black (6%) coat colors. It is uncommon to find buckskins, palominos, roans, pintos, duns, or excessive white markings. Observed phenotypes are fairly consistent and are of Morgan-type. Genetic sampling (n=16) in 2002 suggests close genetic similarity to domestic horse breeds including, Tennessee Walkers, American Saddlebreds, Morgans, and Standardbreds. The last capture sex ratio was 49% mares and 51% studs. Approximately 63% of the herd was 0-5 years old, 16% were 6-9 years old, and 21% were 10 years and older. Population modeling shows current expected sex and age distributions to be normal (Appendix C). Gathers are scheduled in winter when snow softens/covers the rocky ground to minimize hoof injuries, especially to foals.

### **3.1.2 Fox - Lake Range HMA (NV-228)**

The Fox-Lake Range HMA (approx. 177,300 acres) located within the Pole Canyon and Rodeo Creek Allotments (Map 1) is designated as about 97% public and 3% private lands.

Approximately 25 planimetric miles of the fenced southern HMA boundary is coincident with the Pyramid Lake Paiute Indian Reservation. The terrain consists of north-south trending mountains separated by a broad valley. Geothermal and farming activities occur in the valley near the small community of Empire. Elevations range from 3,897 feet along the Smoke Creek Desert to 7,608 at Pah Rum Peak. Climate is characterized by warm dry days, cool nights and annual precipitation amounts ranging from 4 to 6 inches at lower elevations to about 12 inches at higher elevations.

Narrow perennial streams and springs are the main water sources. In the Rodeo Creek Allotment, cattle use is managed on a summer-winter rotation system with grazing occurring on lower elevations from November through April and on higher elevations from May through October. However, no pasture fences separate livestock summer-winter use areas. The livestock operator removed his cattle June 1<sup>st</sup>, 2004 and took a voluntary non-use for the remainder of the summer. The Pole Canyon Allotment has been in non-use status for the last five years and will continue to be so until allotment fences are repaired, however wild horses (AML = 0) and unauthorized cattle are present.

Vegetation varies from salt desert shrub communities at lower elevations to big sagebrush/bunch grass communities at higher elevations. Typical species at lower elevations include shadscale, bud sage, black greasewood, and Sandberg's bluegrass. Species typical in higher elevations include low sage, Wyoming sagebrush, mountain big sagebrush, bitterbrush, rabbitbrush, Utah juniper, needlegrass, basin wildrye, squirreltail, Indian paintbrush, and phlox. However, several

native forage species such as Indian ricegrass, squirreltail, and winterfat are scarce. Contributing factors include wild fires, cheat grass invasion, insect infestation, prolonged and recurrent drought, and over-utilization.

Approximately 1,900 acres burned on the Fox Range in 2001 and historic fire scars are numerous throughout the area. Current rehabilitation costs (\$80,000) have included aerial seeding and monitoring of the Bull Basin Fire. The Pole Creek (NV-020-14A) and Fox Range (NV-020-14) WSAs are located within the HMA as displayed on Map 1.

The HMA is managed for an AML range from 122 to 204 head as established in the 1997 and 2000 FMUDs, and EA# NV-020-00-50. The current population is estimated at 536 head (439% over the low range AML). Refer to section 1.1 Background Information for additional details. Ranch horses were raised in the area by the Ceresola family prior to 1971. Horses are known to cross the fenced boundary between the HMA and the Pyramid Lake Indian Reservation as well. Capture data (2002) lists common coat colors as bay (53%), sorrel (21%), black (8%), and buckskin (8%). Roans and grays are not uncommon, however, pintos and duns are. Observed phenotypes vary from extremely small slight-built horses to small ranch-type. Genetics are probably influenced by Reservation herds and nutrition is most likely limited by habitat conditions. The last capture sex ratio was 52% mares and 48% studs. Approximately 66% of the herd was 0-5 years old, 18% were 6-9 years old, and 16% were 10 years and older. Population modeling shows current expected sex and age distributions as normal (Appendix C).

### **3.1.3 Granite Range HMA (NV-221)**

The Granite Range HMA (approx. 101,700 acres) located within the Buffalo Hills Allotment (Map 2) is designated as about 87% public and 13% private lands. The terrain consists of a steep north-south trending mountain range with small narrow valleys in the south half and broad sloping ridge tops in the north half. Elevations range from 3,920 along the Black Rock Desert to 9,056 feet at Granite Peak. Climate is characterized by warm dry days, cool nights and annual precipitation ranging from 4 to 18 inches.

Perennial and developed waters are numerous in this HMA, including four Lahontan cutthroat trout (LCT) recovery streams. Continued drought has reduced available water amounts significantly as some springs have dried up. Cattle use is rotated between two consecutive years of grazing and two consecutive years of rest with grazing occurring from April to mid-July. There is one maintained drift fence which separates the HMA into north and south pastures.

Vegetative types found within the HMA vary from greasewood-shadscale-bunch grass at lower elevations to mountain sagebrush-bunch grass, low sagebrush-bunch grass, mountain mahogany, and aspen at higher elevations. Historic fire scars are numerous throughout the HMA and mainly support cheat grass. No wilderness or wilderness study area occurs in this HMA.

The HMA is managed for an AML range from 155 to 258 head as established in the 1993 FMUD and EA# NV-020-00-50. The current population is estimated at 691 head (446% over the low range AML). Refer to section 1.1 Background Information for additional details. Horses are descendants of ranch and cavalry remount horses, although Appaloosa horses were reported to have escaped into the area more recently. Horses in the north pasture exhibit bay (28%), buckskin (25%), sorrel (10%), or appaloosa (8%) coat colors (2001 capture data). Horses in the

south pasture exhibit sorrel (24%), tobiano pinto (21%), bay (15%), or appaloosa (8%) coat colors (2002 capture data). Observed phenotypes vary with Appaloosa, Quarter Horse, Thoroughbred, and draft breed influences evident. The last capture sex ratio was 48% mares and 52% studs. Approximately 63% of the herd was 0-5 years old, 14% were 6-9 years old, and 23% were 10 years and older. Population modeling shows current expected sex and age distributions to be normal (Appendix C).

## Environmental Impacts

### Impacts Common to Alternatives 1 and 2

Direct impacts to individual horses and population-wide impacts as a result of the stresses associated with the herding, capture, processing and transportation of animals from the gather sites or temporary holding facilities to an adoption preparation facility and as a result of fertility control treatment are well documented (refer to EA #NV-020-00-50). Impacts to the BHC herds as a result of the Proposed Action would be similar to those described in the referenced EA (and others). An excerpt of EA #NV-020-00-50 is included as Appendix D of this document for reference. Direct and indirect impacts specific to the BHC herds as a result of Alternatives 1 and 2 are discussed below.

### Alternative 1: Proposed Action (Gather to Low Range AML with Fertility Control)

The direct impacts of the Proposed Action would include capturing about 1,569 wild horses, removing 1,274 head, and releasing 295 back to the range following the gather. About 148 mares (50% of the release animals) would be treated with two-year immunocontraceptive (PZP) vaccine. This vaccine has shown effectiveness of 94% in year one, 82% in year two, and 68% in year three. Under this alternative, the average annual growth rate for each HMA would decline to about 12% (Appendix C).

Population modeling was completed for the Proposed Action for each HMA population as described in Appendix C. Overall, implementation of the Proposed Action would prevent wild horse populations from increasing beyond the upper limit of the management range until 2008. However, some animals in the 6 to 9 age class may need to be removed to meet management objectives. Another removal in four years would maintain horse numbers within the population management range and provide another opportunity to conduct fertility control. Another objective of the population modeling was to determine if the Proposed Action would “crash” the population (result in extremely low population numbers or growth rates). Modeling results do not indicate a crash is likely to occur in any of the HMAs. Genetic health impacts of a removal/treatment would be minimal. HMA populations are over 150 animals, a wide variety of phenotypes (size, color, type, markings) occur, and animals are known to mix with other herds.

The indirect impacts of removing 1,274 head of excess wild horses before range conditions further deteriorate include reducing the demand for water at available water sources, decreasing competition for available forage, and reducing negative impacts to riparian habitat. Decreased competition coupled with reduced reproduction as a result of fertility control should result in improved health and condition of mares and foals and in maintaining healthy range conditions over the long-term. Additionally, reduced reproduction rates would be expected to extend the time interval between gathers thus reducing disturbance to individual animals and to social herds.

### Alternative 2: Gather to Low Range AML without Fertility Control

The direct impacts of this action would include capturing about 1,569 wild horses, removing 1,274 head, and releasing 295 animals back to the range following the gather. Release mares would not be treated with fertility control. Under this alternative, an average annual growth rate of 19% would be expected to occur in each HMA until the next gather (Appendix C).

Population modeling was completed for Alternative 2 as described in Appendix C.

Implementation of this alternative would need to include the removal of some horses in the 6 to 9 age class to reduce current populations to low AML. The model does not include this age class for removal resulting in “typical trial” horse populations remaining slightly above AML (Fox-Lake Range, Granite Range HMA). However, if all age classes are included in the removal criteria, horse populations in year 2005 are similar to the Buffalo Hills graph for alternative 2. Modeling results do not indicate a population crash is likely to occur in any of the HMAs with this alternative. Genetic health impacts of a removal would be minimal. HMA populations are over 150 animals, a wide variety of phenotypes (size, color, type, markings) occur, and animals are known to mix with other herds.

The indirect impacts of removing 1,274 head of excess wild horses before range conditions further deteriorate include reducing the demand for water at available water sources, decreasing competition for available forage, and reducing negative impacts to riparian habitat. Decreased competition should result in improved herd health and body condition of individuals.

### Alternative 3: No Action (Delay Gather/Removal of Wild Horses)

The direct impacts of not removing 1,274 excess wild horses would affect current and future herd population numbers. Populations would continue to grow annually by 18 percent or more within each HMA (Appendix C). The “typical trial” displayed for each of the HMAs shows wild horse populations exceeding 1,000 head/HMA in two years. This would be about 3,000 head or double the current population estimates.

Indirect impacts may include high horse mortality rates, thin body conditions, and poor health as habitat resources are diminished by increasing horse populations. Older and younger age classes and lactating mares would be most affected by nutritional deficiencies and stress. Skewed sex ratios, undesirable age distributions, and social disruption may result as herd members compete for available resources. Nutritional deficiencies would negatively affect growing animals and may limit their potential growth. Parasites and disease would increase as population densities continue to increase. Horses would move outside established HMAs in search of habitat as demands on resources within HMAs increase. Few resources would be available for wildlife and livestock.

## **3.2 Cultural Resources**

### Affected Environment

A complete inventory of archeological sites in the BHC has not been completed. Previous inventories have identified pre-historic sites (rock art sites, lithic scatters, isolated projectile points, etc.) in the area. Historic sites associated with ranching and mining are known to occur in this area as well. The highest concentration of prehistoric sites is in association with permanent and intermittent water sources.

## Environmental Impacts

### Alternatives 1 and 2 (Gather to Low Range AML with or without Fertility Control, respectively)

Direct impacts to cultural resources are not anticipated to occur because gather sites and temporary holding facilities would be inventoried for cultural resources prior to construction. The WFO archeologist would review all proposed and previously used gather sites and temporary holding facility locations to determine if these have had a cultural resources inventory and/or if a new inventory is required. If cultural resources are encountered at proposed gather sites or temporary holding facilities, these locations would not be utilized unless they could be modified to avoid impacts.

Indirect impacts to cultural resources occur from increased erosion and from trampling damage in areas where there are concentrations of animals. Adverse impacts to cultural resource sites from overgrazing and trampling include modification and displacement of artifacts and features as well as erosion of organic middens containing valuable information. Areas in the vicinity of permanent and intermittent water sources (i.e., riparian areas) have the highest potential for cultural resource sites. Since wild horses and burros concentrate in these areas, these areas are most likely to be impacted by trampling and erosion.

### Alternative 3: No Action (Delay Gather/Removal)

No direct impacts. However indirect impacts as described above may occur as wild horse populations continue to increase and concentrate.

## **3.3 Invasive, Non-Native Species**

### Affected Environment

Noxious weed and invasive non-native species introduction and proliferation are of growing concern among local and regional interests. Noxious weed surveys including invasive and non-native species in the WSA's of the Buffalo Hills Complex have been completed. These surveys indicate that the following state listed noxious weeds occur:

**Table 4. Invasive, Non-Native Plant Species.**

Common Name	Scientific Name
Bull Thistle	<i>Cirsium vulgare</i>
Medusahead	<i>Taeniatherum caput-madusae</i>
Perennial Pepperweed	<i>Lepidium latifolium</i>
Russian Knapweed	<i>Centaurea repens</i>
Saltcedar	<i>Tamarix ramossissima</i>

These weeds occur in a variety of habitats including road side areas, rights-of-way, wetland meadows, as well as undisturbed upland rangelands.

## Environmental Impacts

### Alternatives 1 and 2 (Gather to Low Range AML with or without Fertility Control, respectively)

Direct impacts include potential importation or transportation of new species of weeds to the area, spread of existing noxious weed seeds and plant parts to new areas, and increases in the

size of existing weed infestation sites. These impacts would potentially be accomplished by contractor vehicles and livestock entering the project area and through feeding of contaminated hay to captured horses which are released before seeds pass through their digestive system. Indirect impacts would be related to horse population densities and degree of utilization on desired forage species. Existing sites may spread more rapidly if desired plant communities are degraded.

#### Alternative 3: No Action (Delay Gather/Removal)

No direct impacts. Indirect impacts would include the potential increase in noxious weeds from increased utilization levels and ground disturbance related to increased wild horse population numbers. Noxious weeds can increase with overuse of the range by grazing animals or through surface disturbance. Reduced vegetative vigor, health, and reproductive potential of desired vegetation would favor the increase of non-native invasive species.

### **3.4 Livestock Grazing**

#### Affected Environment

Reference section 3.1 Wild Horses above. Applicable livestock grazing systems are discussed under each HMA.

#### Environmental Impacts

#### Alternatives 1 and 2 (Gather to Low Range AML with or without Fertility Control, respectively)

There would be no direct impacts from either alternative in the Buffalo Hills and Granite Range HMAs; however, the direct impact in the Fox-Lake Range HMA would be the minor short-term displacement of cattle from the gathering activities and increased vehicle traffic. The indirect impacts would be an increase in the forage availability and quality, reduced competition for water and forage, and improved vegetative resources that will lead to a thriving ecological condition. Indirect impacts would be slightly less for the Proposed Action.

#### Alternative 3: No Action (Delay Gather/Removal)

There would be no direct impacts of this alternative to the livestock operators or livestock operation. The indirect impacts would be continued resource deterioration resulting from competition between wild horses and cattle for water and forage, reduced quantity and quality forage, and undue hardship on the livestock operators through a lack of livestock forage on public lands.

### **3.5 Migratory Birds**

#### Affected Environment

Neo-tropical migrant bird species are those species that breed in the temperate portions of North America and winter in the tropics in either North or South America. They are protected by international treaty and additional emphasis on maintaining or improving their habitats is provided by Executive Order #13186. Within the Great Basin and the project area, quality riparian habitats and healthy sagebrush communities with inclusions of trees and shrubs are

required for healthy neo-tropical migrants' populations. A migratory bird inventory has not been completed for the BHC.

### Environmental Impacts

#### Alternatives 1 and 2 (Gather to Low Range AML with or without Fertility Control, respectively)

The project area does have riparian and sagebrush habitats, therefore potential impacts to neo-tropical migrants may be expected. Neither alternative would directly impact migratory bird populations with the exception of possible displacement from small areas of their habitat. This impact would be minimal, temporary, and short-term in nature. Indirect impacts would be related to wild horse densities and patterns of use. Reduction of current wild horse populations would provide opportunity for vegetative communities to progress toward achieving a thriving natural ecological balance. Either alternative would result in an impact to migratory bird habitat by creating a diverse vegetative structure through improvement and maintenance of healthy populations of native perennial plants.

#### Alternative 3: No Action (Delay Gather/Removal)

No direct impacts. Indirect impacts would be the increasing inability of rangelands to support healthy populations of native perennial plants. Indirect impacts to vegetative communities would increase each year that a gather is postponed which would impact migratory bird species and their habitats.

## **3.6 Recreation**

### Affected Environment

Most of the recreation that occurs in this area is of a dispersed type. People drive their vehicles for pleasure, explore with their four-wheel drives and motorcycles, and enjoy the out-of-doors. They also hunt, rock hound, camp, picnic, and view wildlife and horses. For the most part, there are no areas where recreation visitors congregate. The BHC falls in Nevada Hunt Units 014, 015, and 022. Water fowl, upland game, and furbearer trapping seasons are in season during a portion of the proposed gather date, but the overall seasons occur over many months.

### Environmental Impacts

#### Alternatives 1 and 2 (Gather to Low Range AML with or without Fertility Control, respectively)

Direct impacts would be increased travel on main roads as horses are moved from temporary trap sites to holding sites or other BLM facilities. Direct impacts may include disruption of a hunt or recreation experience if horses are moved through the area. These impacts would be minimal and temporary in nature. Indirect impacts would be lower horse densities resulting in fewer wild horse viewing opportunities.

#### Alternative 3: No Action (Delay Gather/Removal)

No direct impacts. Indirect impacts would be related to wild horse population numbers. Increasing horse densities would degrade game habitat and affect aesthetics of visual resources which would impact recreational experiences.

### **3.7 Special Status Species**

#### **Affected Environment**

Recovery habitats for Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) (LCT), a federally listed threatened species, occurs within the BHC. These streams occur within the Granite Range of the BHC and include Red Mountain Creek, Wagontire Creek, Cottonwood Creek, and Granite Creek. The LCT Recovery Team for this area has identified Cottonwood and Wagontire Creeks as high priority meta-populations for the recovery of LCT.

Two population management units (PMUs) for Greater Sage-grouse (*Centrocercus urophasianus*), a BLM sensitive species, exist in the BHC. A portion of the Massacre PMU (105,400 acres) occurs in the Granite Range and about 96,400 acres of the Buffalo PMU falls in the Buffalo Hills HMA. Few active leks have been identified.

Potential habitat exists for the pygmy rabbit (*Brachylagus idahoensis*) and western burrowing owl (*Athene cunicularia hypugea*), both BLM sensitive species. However, at this time, no known populations are located specifically in the BHC.

#### **Environmental Impacts**

Alternatives 1 and 2 (Gather to Low Range AML with or without Fertility Control, respectively)  
Potential direct impacts include trampling of stream, riparian, and sagebrush habitat as horses are gathered. Collapse of rabbit or owl burrows from horses or equipment may occur. Indirect impacts would be related to wild horse population size and concentrations. Reduction of populations would impact potential LCT habitat by reducing utilization on riparian vegetation, decreasing trampling and shearing impacts to stream banks, and reducing upland utilization (improving watershed health). Wild horse reductions would impact sage-grouse habitat by reducing upland utilization, reducing degraded meadows which are critical for sage-grouse brooding habitats, and reducing trampling impacts to sage-grouse cover/forage species. A direct improvement in sage-grouse brooding habitat where sage-grouse avoid meadows and riparian areas with bare dirt would result. Indirect impacts to potential pygmy rabbit and burrowing owl habitat would also occur due to fewer hoof impacts.

#### Alternative 3: No Action (Delay Gather/Removal)

No direct impacts. Indirect impacts would include increasing impacts to LCT, sage-grouse, pygmy rabbit, and burrowing owl habitats as wild horse populations increase each year that a gather is postponed. The impacts to LCT recovery habitats could jeopardize the future recovery of this species within the BHC area.

### **3.8 Vegetation**

#### **Affected Environment**

Reference section 3.1 Wild Horses above. Vegetation is discussed under each HMA.

#### **Environmental Impacts**

Alternatives 1 and 2 (Gather to Low Range AML with or without Fertility Control, respectively)

Direct impacts would consist of disturbance to vegetation and soils immediately in and around the temporary gather site(s) and holding facilities. Impacts would be created by vehicle traffic, hoof action as a result of concentrating horses, and could be locally severe in the immediate vicinity of the gather sites and holding facilities. Generally, these sites would be small (less than one half acre) in size. Any impacts would remain site specific and isolated in nature. In addition, most gather sites and holding facilities would be selected to enable easy access by transportation vehicles and logistical support equipment. Normally, they are located near or on roads, pullouts, water haul sites, or other flat areas which have been previously disturbed. These common practices would minimize the cumulative effects of these impacts.

Indirect impacts would be the opportunity for vegetative communities to progress toward achieving a thriving natural ecological balance. Reduced concentrations of wild horses would contribute to the improvement of vegetative resources. Forage utilization levels would be reduced which would improve forage availability, resulting in increased density, cover, plant vigor, seed production, seedling establishment, and forage production.

Alternative 3: No Action (Delay Gather/Removal)

No direct impacts. Indirect impacts include increased competition for forage among multiple-uses as wild horse populations continue to increase. Forage utilization would exceed the capacity of the range resulting in a loss of desired forage species from plant communities as plant health and watershed conditions deteriorate. Soil loss from wind and water erosion, and invasion of undesired plant species would occur. Abundance and long-term production potential of desired plant communities may be compromised.

### **3.9 Water Quality, Wetlands, and Riparian Zones**

#### **Affected Environment**

Riparian areas are limited within the Buffalo Hills HMA and are generally associated with springs and seeps. Numerous reservoirs have been established, but water availability is dependent on seasonal water or storm events. Narrow perennial streams and spring/seeps are more numerous in the Granite Range and Fox-Lake Range HMAs. Wild horses contribute to riparian degradation through removal of riparian vegetation and by trailing/trampling which compacts soil and alters stream banks. Riparian sites within the BHC have been recently assessed for riparian functionality. The majority of sites are classified as “functioning at risk.” Riparian sites are heavily utilized especially when the water flow is low and water availability is limited during droughts. Horses often dig for water during dry summer months. This is the sixth consecutive year of drought in the area.

#### **Environmental Impacts**

Alternatives 1 and 2 (Gather to Low Range AML with or without Fertility Control, respectively)

Direct impacts to water quality, wetlands or riparian zones occur when wild horses cross streams or springs as they are herded to temporary gather sites. This impact would be temporary and relatively short-term in nature. Indirect impacts would be related to wild horse population size. Reduction of wild horse populations from current levels would decrease competition for

available water sources which should lead to a reduction in hoof action around unimproved springs, improvement in stream bank stability, and improved riparian habitat condition.

Alternative 3: No Action (Delay Gather/Removal)

No direct impacts. Indirect impacts would be increasing degradation to riparian habitats and water quality as horse populations increase each year that a gather is postponed.

### **3.10 Wilderness/Wilderness Study Areas (WSA)**

#### **Affected Environment**

No wilderness areas are in the BHC. However, three WSA's exist as discussed under each HMA. Reference section 3.1 Wild Horses above. Existing trap sites fall outside WSA boundaries. Any additional trap sites would be located outside WSA boundaries or on identified roads (ways) within WSAs.

#### **Environmental Impacts**

Alternatives 1 and 2 (Gather to Low Range AML with or without Fertility Control, respectively)

No direct impacts to wilderness values are anticipated to occur in the BHC since all trap sites and holding facilities would be located outside of the Poodle Mtn (NV-020-12), Pole Creek (NV-020-14A), and Fox Range (NV-020-14) WSA's or on established ways within WSAs. Indirect impacts to wilderness values are expected as improved ecological conditions of plant communities, aesthetically more appealing to the public than the existing situation, would result from decreased horse populations.

Alternative 3: No Action (Delay Gather/Removal)

No direct impacts. Indirect negative impacts include a decrease in wilderness values as ecological conditions diminish and areas are less aesthetically appealing to the public.

### **3.11 Wildlife**

#### **Affected Environment**

Typical wildlife species found in the BHC include mule deer, California bighorn sheep, pronghorn antelope, sage-grouse, chukar partridge, coyote, and various rodents.

#### **Environmental Impacts**

Alternatives 1 and 2 (Gather to Low Range AML with or without Fertility Control, respectively)

Direct impacts would consist primarily of disturbance and displacement to wildlife by the low-flying helicopter. Typically, the natural survival instinct to this type of disturbance results in fleeing from the perceived danger. Some mammals, reptiles, and birds may be temporarily displaced by the construction and use of temporary gather sites and holding facilities. These impacts would be minimal, temporary, and of short duration. There is a slight possibility that non-mobile or site-specific animals would be trampled. Indirect impacts would be related to wild horse densities. A reduction in the number of wild horses from current levels would decrease competition for available cover, space, forage, inter-specific stress and competition, and

water. Wild horses often display dominant behavior over wildlife species and livestock at water sites forcing animals to wait or go elsewhere for water. A reduction in forage utilization levels and hoof action would improve stream bank stability and riparian habitat condition. Reduced utilization levels should produce increased plant vigor, seed production, seedling establishment, and ecological health of the habitat.

#### Alternative 3: No Action (Delay Gather/Removal)

No direct impacts. Indirect impacts include increased competition between species and diminished habitat conditions. Wild horse populations would increase each year that a gather is postponed, which would impact ecological conditions, wildlife populations, livestock production, and other resource values.

## **4.0 CUMULATIVE IMPACTS**

### Cumulative Impacts

#### Alternatives 1 and 2 (Gather to Low Range AML with or without Fertility Control, respectively)

Implementation of Alternatives 1 or 2 would remove about 1,274 head of excess wild horses. This would reduce competition for available water and forage, and prevent further deterioration of the rangeland and herd health. Future management actions would need to be assessed in detail, however wild horse population modeling results (these alternatives modeled over 10 years) are briefly discussed here and more thoroughly discussed in Appendix C. The Proposed Action show populations stabilizing within the AML range after the second removal/treatment on a 4-year gather cycle. About 255 fewer horses would be removed from the range in ten years. This reduction is due to the consistently reduced growth rate over time as affected by repeated fertility control treatments. Alternative 2 would not apply fertility control and the populations would grow at about 19% per year versus about 12% with fertility control. Modeling results suggest that consistent removals without fertility control on a 3-year gather cycle would also maintain population numbers within the AML range. However, removals without fertility control would increase the frequency of gathers (every 3 years versus every 4), resulting in more frequent (and more instances over time) disturbance to individual animals and herd social structures than removals with fertility control (Proposed Action).

Past, present, and reasonably foreseeable activities which would be expected to contribute to the cumulative impacts of implementing the proposed action include: past wild horse selective criteria, continued livestock grazing, and increased recreational uses. These activities may influence the habitat quality, abundance, and continuity for wild horses. Impacts would be expected to occur slowly over time. BLM would identify these impacts as they occur and mitigate them as needed on a project specific basis to maintain a thriving natural ecological balance and maintain acceptable levels of herd health. Additionally, wild horses would continue to adapt to changes in the environment. The Proposed Action would contribute to the cumulative impacts of future actions by maintaining wild horse populations within AML ranges. Monitoring and management actions establish a process whereby biological and/or genetic issues would be identified and resolved over time.

#### Alternative 3: No Action (Delay Gather/Removal)

Under the No Action alternative, excess animals would not be removed at this time and the wild horse population would continue to grow at 18% or more per year. Cumulative impacts

associated with livestock grazing and recreation use would continue. Unmanaged wild horse populations and failure to remove excess animals would result in animal mortality and diminished health; over-utilization and damage to forage, riparian, and water resources; and, increased competition/conflicts between other uses, including wildlife, livestock, and recreation uses. A thriving natural ecological balance and multiple-use relationship would not be maintained nor would a healthy, self-sustaining wild horse population be supported.

## **5.0 CONSULTATION AND COORDINATION**

During June 2004, a hearing to receive comments concerning the use of helicopters and motorized vehicles to capture wild horses or burros was held in Reno, Nevada. Several comments were supportive of helicopter use while others were concerned with contractor misconduct and inhumane treatment. The Contracting Officer Representative (COR) assigned to the BHC gather would be responsible for insuring contract personnel abide by contract specifications and SOPs to insure inhumane treatment does not occur.

A list of individuals, groups, and agencies notified by certified mail of the Proposed Action and the availability of this EA is attached.

A copy of the Buffalo Hills Complex Gather Plan EA will be posted on BLM Winnemucca Field Internet site ([http://www.nv.blm.gov/Winnemucca/NEPA/EA\\_Buffalo\\_Hills\\_Complex](http://www.nv.blm.gov/Winnemucca/NEPA/EA_Buffalo_Hills_Complex)) for a 30 day public review and comment period.

## **6.0 LIST OF PREPARERS**

Glenna Eckel	Wild Horse and Burro Specialist (Lead)
Rodger Bryan	Supervisory Fish & Wildlife Biologist
Lynn Harrison	Environmental Coordinator
Regina Smith	Archaeologist
Barbara Keleher	Recreation Specialist
Clarence Covert	Wildlife Biologist
Matt Varner	Fisheries Biologist
Jonathan Sheeler	Rangeland Management Specialist (Range)
Chuck Neill	Rangeland Management Specialist (Weeds)
Mike Zielinski	Soil Scientist

## **7.0 APPENDICES**

**Appendix A. Standard Gather Operation Operating Procedures (SOPs)**  
**Appendix B. Standard Fertility Control Treatment Operating Procedures (SOPs)**  
**Appendix C. Buffalo Hills Complex Population Modeling**  
**Appendix D. Reference Material: EA#NV-020-00-50 Excerpts**

## **APPENDIX A**

### **Standard Gather Operation Operating Procedures (SOPs)**

Gathers would be conducted by utilizing contractors from the Wild Horse and Burro Gathers, Western United States Contract, or BLM personnel. The following procedures for gathering and handling wild horses and burros would apply whether a contractor or BLM personnel conduct a gather. For helicopter gathers conducted by BLM personnel, gather operations will be conducted in conformance with the *Wild Horse and Burro Aviation Management Handbook* (March 2000).

Prior to any gathering operation, the BLM will provide for a pre-capture evaluation of existing conditions in the gather area(s). The evaluation will include animal condition, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with, wilderness boundaries, the location of fences, other physical barriers, and acceptable trap locations in relation to animal distribution. The evaluation will determine whether the proposed activities will necessitate the presence of a veterinarian during operations. If it is determined that capture efforts necessitate the services of a veterinarian, one would be obtained before the capture would proceed. The contractor will be apprised of all conditions and will be given instructions regarding the capture and handling of animals to ensure their health and welfare is protected.

Trap sites and temporary holding sites will be located to reduce the likelihood of undue injury and stress to the animals, and to minimize potential damage to the natural resources of the area. These sites would be located on or near existing roads.

The following procedures and stipulations will be followed to ensure the welfare, safety and humane treatment of wild horses and burros in accordance with the provisions of 43 CFR 4700.

#### **A. Capture Methods Used in the Performance of a Gather**

##### **1. Helicopter Drive Trapping**

This capture method involves utilizing a helicopter to herd wild horses and burros into a temporary trap. The following stipulations apply:

- a. A minimum of two saddle horses shall be immediately available at the trap site to accomplish roping if necessary. Roping shall be done as determined by the BLM. Under no circumstances shall animals be tied down for more than one hour.
- b. The Contractor shall assure that bands remain together, and that foals shall not be left behind.
- c. Domestic saddle horses may be used as a pilot (i.e. Judas) horse to lead the wild horses into the trap. Individual ground hazers may also be used to assist in the gather.

##### **2. Helicopter Assisted Roping**

This capture method involves utilizing a helicopter to herd wild horses or burros to ropers. The following stipulations apply:

- a. Under no circumstances shall animals be tied down for more than one hour.
- b. Roping shall be performed in such a manner that bands will remain together. Foals shall not be left behind.

##### **3. Bait Trapping**

This capture method involves utilizing bait (water or feed) to lure wild horses or burros into a temporary trap. The following stipulations apply:

- a. Finger gates shall not be constructed of materials that may be injurious to animals such as; "T" posts, sharpened willows, etc.

- b. All trigger and/or trip gate devices must be approved by the BLM prior to capture of animals.
- c. Traps shall be checked a minimum of once every 10 hours.

## **B. Trapping and Care**

The primary concern is for the safe and humane handling of all animals captured. All capture attempts shall incorporate the following:

1. All trap and holding facility locations must be approved by the BLM prior to construction. The Contractor may also be required to change or move trap locations as determined by the BLM. All traps and holding facilities not located on public land must have prior written approval of the land owner. Prior to setting up a trap or temporary holding facility, BLM will conduct all necessary clearances (archaeological, T&E, etc.).
2. Proposed trap sites and holding facility sites would be examined for the presence of noxious weeds prior to construction. If noxious weeds were found, the trap/holding facility location would be moved to an alternate location.
3. The rate of movement and distance the animals travel shall not exceed limitations set by the BLM, who will consider terrain, physical barriers, weather, condition of the animals, and other factors.
4. All traps, wings, and holding facilities shall be constructed, maintained and operated to handle animals in a safe and humane manner and be in accordance with the following:
  - a. Traps and holding facilities shall be constructed of portable panels, the top of which shall not be less than 72 inches for horses and 60 inches for burros, and the bottom rail of which shall not be more than 12 inches from ground level. All traps and holding facilities shall be oval or round in design.
  - b. All loading chute sides shall be a minimum of 6 feet high and shall be fully covered with plywood (without holes) or like material.
  - c. All runways shall be a minimum of 30 feet long and a minimum of 6 feet high for horses, and 5 feet high for burros, and shall be covered with plywood, burlap, plastic snow fence or like material a minimum of 1 foot to 5 feet for burros and 1 foot to 6 feet for horses. The location of the government furnished portable restraining chute used to restrain, age, or to provide additional care for animals shall be placed in the runway in a manner as instructed by or in concurrence with the BLM.
  - d. All crowding pens including the gates leading to the runways shall be covered with a material which prevents the animals from seeing out (plywood, burlap, snow fence etc.) and shall be covered a minimum of 1 foot to 5 feet above ground level for burros and 2 feet to 6 feet for horses. Eight linear feet of this material shall be capable of being removed or let down to provide a viewing window.
  - e. All pens and runways used for the movement and handling of animals shall be connected with hinged self-locking gates.
5. No fence modifications will be made without authorization from the BLM. The Contractor shall be responsible for restoration of any fence modification, which he has made.
6. When dust conditions occur within or adjacent to the trap or holding facility, the Contractor shall be required to wet down the ground with water.
7. Alternate pens, within the holding facility, shall be furnished by the Contractor to separate mares or jennies with small foals, sick and/or injured animals, and strays from the other animals. Animals shall be sorted as to age, number, size, temperament, sex and condition when in the holding facility so as to minimize, to the extent possible, injury due to fighting and trampling. Under normal conditions, the government will require that animals be restrained for the purpose of determining an animal's age, sex or other necessary procedure. In these instances, a portable restraining chute will be provided by the government. Alternate pens shall be furnished by the Contractor to hold animals if the specific gathering requires the animals to be released back into the capture area(s). In areas requiring one or more trap sites, and when a centralized holding

facility is utilized, the Contractor may be required to provide additional holding pens to segregate animals transported from remote locations so they may be returned to their traditional ranges. Either segregation or temporary marking and later segregation will be at the discretion of the BLM.

8. The Contractor shall provide animals held in the traps and/or holding facilities with a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day. Separate water troughs shall be provided at each pen where animals are being held. Water troughs shall be constructed of such material (e.g. rubber, galvanized metal with rolled edges, rubber over metal) so as to avoid injury to the animals.
9. Animals held for 10 hours or more in the traps or holding facilities shall be provided good quality hay at the rate of not less than 2 pounds of hay per 100 pounds of estimated body weight per day. The contractor together with the on-site BLM representative would examine hay for noxious weed seeds or plant parts prior to initiating the gather. If noxious weed seeds or plant parts are found in the hay, the hay would be removed from the area.
10. It is the responsibility of the Contractor to provide security to prevent loss, injury or death of captured animals until delivery to final destination.
11. The Contractor shall restrain sick or injured animals if treatment is necessary. The BLM will determine if injured animals must be destroyed and provide for destruction of such animals. A veterinarian may be called to make a diagnosis and final determination for the disposition of sick or injured animals. The contractor may be required to dispose of the carcasses as directed by the BLM. Destruction shall be done by the most humane method available, in accordance with BLM policy outlined in Washington Office Instruction Memorandum No. 2001-165 which states; A BLM authorized officer may authorize the euthanasia of a wild horse or burro with any of the following conditions:
  - a. Displays a hopeless prognosis for life;
  - b. Suffers from a chronic or incurable disease or serious congenital defect;
  - c. Requires continuous treatment for the relief of pain and suffering; or
  - d. Is incapable of maintaining a Henneke body condition score greater than 2, in a normal rangeland environment.
12. Animals shall be transported to final destination from temporary holding facilities within 24 hours after capture unless prior approval is granted by the BLM for unusual circumstances. Animals to be released back into the HMA following gather operations may be held up to 21 days or as directed by the BLM. Animals shall not be held in traps and/or temporary holding facilities on days when there is no work being conducted except as specified by the BLM. The Contractor shall schedule shipments of animals to arrive at final destination between 7:00 a.m. and 4:00 p.m. No shipments shall be scheduled to arrive at final destination on Sunday and Federal holidays, unless prior approval has been obtained by the BLM. Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours. Animals that are to be released back into the capture area may need to be transported back to the original trap site. This determination will be at the discretion of the BLM.
13. Branded or privately owned animals captured during gather operations will be handled in accordance with state estray laws and existing BLM policy.

### **C. Motorized Equipment**

1. All motorized equipment employed in the transportation of captured animals shall be in compliance with appropriate State and Federal laws and regulations applicable to the humane transportation of animals. The Contractor shall provide BLM with a current safety inspection (less than one year old) for all motorized equipment and tractor-trailers used to transport animals to final destination.

2. All motorized equipment, tractor-trailers, and stock trailers shall be in good repair, of adequate rated capacity, and operated so as to ensure that captured animals are transported without undue risk or injury.
3. Only tractor-trailers or stock trailers with a covered top shall be allowed for transporting animals from trap site(s) to temporary holding facilities, and from temporary holding facilities to final destination(s). Sides or stock racks of all trailers used for transporting animals shall be a minimum height of 6 feet 6 inches from the vehicle floor. Single deck tractor-trailers 40 feet or longer shall have two (2) partition gates providing three (3) compartments within the trailer to separate animals. Tractor-trailers less than 40 feet shall have at least one partition gate providing two (2) compartments within the trailer to separate animals. Compartments in all tractor-trailers shall be of equal size plus or minus 10 percent. Each partition shall be a minimum of 6 feet high and shall have at the minimum a 5 foot wide swinging gate. The use of double deck trailers is unacceptable and will not be allowed.
4. All tractor-trailers used to transport animals to final destination(s) shall be equipped with at least one (1) door at the rear end of the trailer, which is capable of sliding either horizontally or vertically. The rear door(s) of tractor-trailers and stock trailers must be capable of opening the full width of the trailer. Panels facing the inside of all trailers must be free of sharp edges or holes that could cause injury to the animals. The material facing the inside of the trailer must be strong enough, so that the animals cannot push their hooves through the side. Final approval of tractor-trailers and stock trailers used to transport animals shall be held by the BLM.
5. Floors of tractor-trailers, stock trailers, and the loading chute shall be covered and maintained with wood shavings to prevent the animals from slipping.
6. Animals to be loaded and transported in any trailer shall be as directed by the BLM and may include limitations on numbers according to age, size, sex, temperament, and animal condition. The following minimum square feet per animal shall be allowed in all trailers:
  - 11 square feet/adult horse (1.4 linear feet in an 8 foot wide trailer)
  - 8 square feet/adult burro (1.0 linear feet in an 8 foot wide trailer)
  - 6 square feet/horse foal (0.75 linear feet in an 8 foot wide trailer)
  - 4 square feet/burro foal (0.50 linear feet in an 8 foot wide trailer)
7. The BLM shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of captured animals. The BLM shall provide for any brand and/or inspection services required for the captured animals.
8. If the BLM determines that dust conditions are such that the animals could be endangered during transportation, the Contractor will be instructed to adjust speed.
9. The contractor together with the on-site BLM representative would examine vehicles for noxious weed seeds or plant parts prior to initiating the gather. If noxious weed seeds or plant parts are found on vehicles, the vehicle would be cleaned.

#### **D. Safety and Communications**

1. The Contractor shall have the means to communicate with the BLM and all contractor personnel engaged in the capture of wild horses and burros utilizing a VHF/FM Transceiver or VHF/FM portable Two-Way radio. If communications are ineffective the government will take steps necessary to protect the welfare of the animals.
2. The proper operation, service and maintenance of all contractor furnished property is the responsibility of the Contractor. The BLM reserves the right to remove from service any contractor personnel or contractor furnished equipment which, in the opinion of the BLM, violate contract rules, are unsafe or otherwise unsatisfactory. In this event, the contractor will be notified in writing to furnish replacement personnel or equipment within 48 hours of notification. All such replacements must be approved in advance of operation by the BLM.
3. All accidents occurring during the performance of any delivery order shall be immediately reported to the BLM.

4. The Contractor must operate in compliance with all applicable Federal, State, and Local laws and regulations.
5. Fueling operations shall not take place within 1,000 feet of animals.

#### **E. Public Participation**

Opportunities for public viewing (i.e. media, interested public) of gather operations will be made available to the extent possible, however the primary consideration will be to protect the health and welfare of the animals being gathered. The public must adhere to guidance from the on site BLM representative. It is BLM policy that the public will not be allowed to come into direct contact with wild horses and burros held in a BLM facility. Only BLM or contractor personnel may enter the trap site or temporary holding facility corrals. The general public may not directly handle the animals at any time or for any reason during gather operations.

#### **F. Responsibility and Lines of Communication**

The Contracting Officer's Representative, and Project Inspectors, from the Winnemucca Field Office, will have the direct responsibility to ensure the Contractor's compliance with the contract stipulations. All employees involved in the gathering operation will keep the best interests of the animals at the forefront at all times.

The Assistant Field Manager for Renewable Resources and the Field Manager will take an active role to ensure that appropriate lines of communication are established between the field, Field Office, Nevada State Office, National Wild Horse and Burro Program Office, and the Palomino Valley Wild Horse and Burro Center. All publicity, formal public contact and inquiries will be handled through the Assistant Field Manager for Renewable Resources.

#### **G. Cultural Resources**

Personnel working at gather sites will be advised of illegality of collecting artifacts.

Prior to implementation of gather operations, trap sites and temporary holding facilities would be evaluated for cultural resources. Gather sites and temporary holding facilities would not be constructed on wetlands or riparian zones.

## **APPENDIX B**

### **Standard Fertility Control Treatment Operating Procedures (SOPs)**

The following management and monitoring requirements are part of the Proposed Action:

- PZP vaccine would be administered by trained BLM personnel.
- A liquid dose of PZP would be administered concurrently with a time-released portion of the drug (pelleted formulation) to breeding mares returned to the range (the pellets are injected with the liquid and are designed to release PZP at several points in time much the way time-release cold pills work).
- Delivery of the vaccine would be as an intramuscular injection by jab stick syringe or dart with a 12 gauge needle or 1.5" barbless needle, respectively while mares are restrained in the working chute; 0.5 cubic centimeters (cc) of the PZP vaccine would be emulsified with 0.5 cc of adjuvant (a compound that stimulates antibody production) and loaded into the delivery system. The pellets would be placed in the barrel of the syringe or dart needle and would be injected with the liquid. Upon impact, the liquid in the chamber would be propelled into the muscle along with the pellets.<sup>1</sup>
- All treated mares would be freeze-marked on the hip to enable researchers to positively identify the animals during the research project as part of the data collection phase.
- At a minimum, monitoring of reproductive rates using helicopter flyovers will be conducted in years two through four by locating treated mares and checking for presence/absence of foals. The flight scheduled for year four will also assist in determining the percentage of mares that have returned to fertility. In addition, field monitoring will be routinely conducted as part of other regular ground-based monitoring activities.
- A field data sheet will be forwarded to the field from BLM's National Program Office (NPO) prior to treatment. This form will be used to record all pertinent data relating to identification of the mare (including a photograph when possible), date of treatment, type of treatment (one- or two-year vaccine, adjuvant used) and HMA, etc. The form and any photos will be maintained at the field office and a copy of the completed form will be sent to the authorized officer at NPO (Reno, Nevada).
- A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, disposition of any unused PZP, the number of treated mares by HMA, field office and state, along with the freeze-mark applied by HMA.
- The field office will assure that treated mares do not enter the adoption market for three years following treatment. In the rare instance, due to unforeseen circumstance, treated mare(s) are removed from an HMA before three years has lapsed, they will be maintained in either a BLM facility or a BLM-contracted long-term holding facility until expiration of the three-year holding period. In the event it is necessary to remove treated mares, their removal and disposition will be coordinated through NPO. After expiration of the three-year holding period, the animal may be placed in the adoption system.

<sup>1</sup> This delivery method has been used previously to deliver immunocontraceptive vaccine with acceptable results. Administration of this two-year vaccine to mares would be expected to be 94% effective the first year, 82% effective the second year, and 68% effective the third year. To date, one herd area has been studied using the two-year PZP vaccine. The Clan Alpine study in Nevada was started in January 2000, with the treatment of 96 mares. The test resulted in fertility rates in treated mares of 6% in year one, 18% in year two and 32% in year three. Average fertility rates in untreated mares range between 50-60% in most populations. The Clan Alpine fertility rate in untreated mares, obtained from direct observation in September of each year, average 51% over the course of the study.

## APPENDIX C

### Buffalo Hills Complex Population Modeling

#### Results - Population Modeling, Buffalo Hills Complex

Version 1.40 of the WinEquus program, created April 2, 2002, was utilized to complete population modeling for the Buffalo Hills Complex (Buffalo Hills (NV-220), Fox-Lake Range (NV-228), and Granite Range (NV-221) HMAs) to analyze effects of actions or no action on horse populations.

#### Objectives of Population Modeling

Review of the data output for each of the simulations provided many useful comparisons of the possible outcomes for each alternative. The developer, Stephen Jenkins, recommends thinking about the range of possible outcomes and not just focusing on one average or typical trial. Some of the questions that need to be answered through the modeling include:

- Do any of the alternatives “crash” the population?
- What effect does fertility control have on population growth rate?
- What effects do the different alternatives have on the average population size?

#### Population Data, Criteria, and Parameters utilized for Population Modeling

Age-sex distribution data for each HMA was compiled and modeled from existing capture data records and census counts. Modeled age-sex distributions were then used to represent the post-foaling 2004 age-sex structure for each HMA as displayed in the table below.

##### I. Initial Age-Sex Structure (2004) – Buffalo Hills Complex HMAs

Age Class	Buffalo Hills		Fox-Lake Range		Granite Range (North/South)	
	Females	Males	Females	Males	Females	Males
Foals	8	5	57	65	67	74
1	32	26	52	57	77	57
2	43	30	47	43	57	48
3	33	33	10	9	12	10
4	27	19	15	10	19	13
5	31	16	18	12	28	18
6	30	16	22	13	28	13
7	17	8	14	7	22	15
8	10	5	12	5	15	14
9	3	3	8	8	11	12
10-14	6	9	13	10	20	16
15-19	10	17	7	6	15	10
20+	10	27	7	9	10	10
Total	260	214	282	254	381	310

All simulations used the survival probabilities and foaling rates supplied with the WinEquus population model for the Granite Range HMA. Survival and foaling rate data were extracted from, *Wild Horses of the Great Basin*, by J. Berger (1986, University of Chicago Press, Chicago, IL, xxi + 326 pp.). Rates are based on Joel Berger’s 6 year study in the Granite Range HMA in northwestern Nevada. However, the sex ratio at birth observed by Berger in the Granite Range was modified from 57% males at birth to 50% males at birth for this modeling effort based on capture histories.

Survival probabilities, foaling rates, and selective removal criteria utilized in the population modeling for each alternative are displayed in the following tables. Fertility treatment is only applied to breeding age (3 and older) mares:

**Survival Probabilities and Foaling Rates**

Age Class	Survival Probabilities		Foaling Rates
	Females	Males	
Foals	.917	.917	--
1	.969	.969	--
2	.951	.951	.35
3	.951	.951	.40
4	.951	.951	.65
5	.951	.951	.75
6	.951	.951	.85
7	.951	.951	.90
8	.951	.951	.90
9	.951	.951	.90
10-14	.951	.951	.85
15-19	.951	.951	.70
20	.951	.951	.70

**Removal Criteria - Standard**

Age	Percentages for Removals	
	Females	Males
Foal	100%	100%
1	100%	100%
2	100%	100%
3	100%	100%
4	100%	100%
5	100%	100%
6	--	--
7	--	--
8	--	--
9	--	--
10-14	100%	100%
15-19	100%	100%
20+	100%	100%

### Population Modeling Criteria

The following summarizes the population modeling criteria common to action alternatives:

- Starting Year: 2004
- Initial gather year: 2004 (prior to 2005 foaling)
- Gather interval: 4 (4-year gather cycle, e.g., 2005, 2009, 2013)
- Sex ratio at birth: 50% male
- Percent of the population that can be gathered: 90%
- Minimum age for long term holding facility horses: 10 years old
- Foals are included in the AML: Yes
- Simulations were run for 10 years with 100 trials each

The following summarizes the population modeling criteria for the No Action alternative:

- Starting Year: 2004
- Sex ratio at birth: 50% male

Additional population modeling parameters utilized in modeling the alternatives:

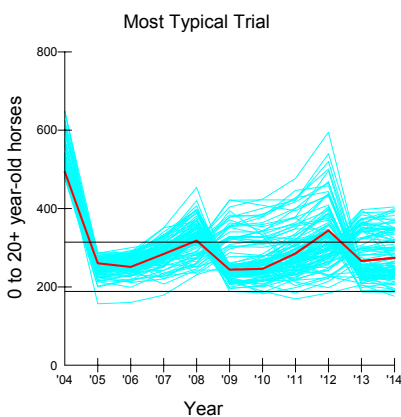
Alternative	I (Proposed)	II	III (No Action)
AML Range	Varies by HMA	Varies by HMA	Varies by HMA
Mgt by removal only	No	Yes	N/A
Mgt by removal and fertility control	Yes	No	N/A
Gather when population exceeds "X" horses	High AML/HMA	High AML/HMA	N/A
Reduce population to "X" horses	Low AML/HMA	Low AML/HMA	N/A
Gather for fertility control regardless of pop	Yes	N/A	N/A
Gathers continue after removals to treat additional females	Yes	N/A	N/A
Effectiveness of Fertility control: year 1	94%	N/A	N/A
Effectiveness of Fertility control: year 2	82%	N/A	N/A
Effectiveness of Fertility control: year 3	68%	N/A	N/A

## Population Modeling Results

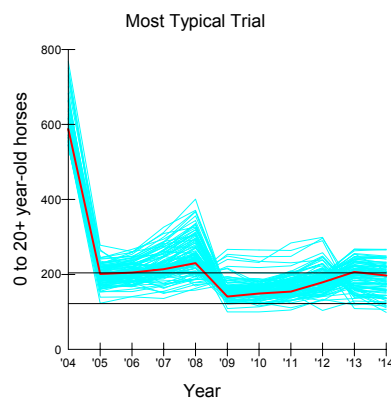
Each HMA population was run through a 10 year simulation for each alternative. Simulations were run with applicable management options selected for a time period of ten years. Simulations were based on individual HMA populations to assess management affects on smaller population numbers as the degree of herd mixing within the complex is unknown. Alternative 1, the Proposed Action, modeled the affects of removal and fertility treatment management actions on wild horse populations based on a four-year gather cycle. Alternative 2 modeled affects of removal actions only on population based on a four-year gather cycle. Alternative 3 modeled the growth of horse populations with no management actions.

### **Alternative 1, Proposed Action (Gather to Low AML with Fertility Control)**

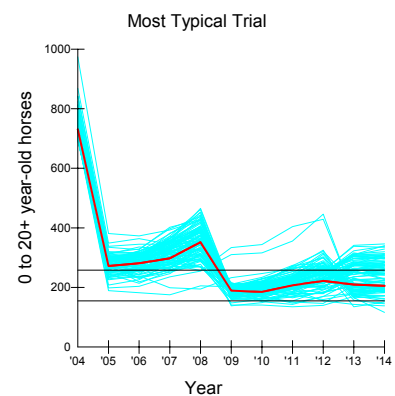
Displayed in the graphs below are the most typical (median) trials (dark line) of the 100 simulations (lighter lines) based on the Proposed Action alternative by HMA. Horse populations are modeled over ten years on a 4-year gather/fertility treatment cycle. Results indicate wild horse populations could generally be maintained between the high and low AML range (black horizontal lines). Additionally, graphs show the range of population values based upon 100 simulation runs. It is important to note that none of the populations crash over the ten year time period.



Buffalo Hills HMA populations, Alt. 1



Fox-Lake HMA populations, Alt. 1

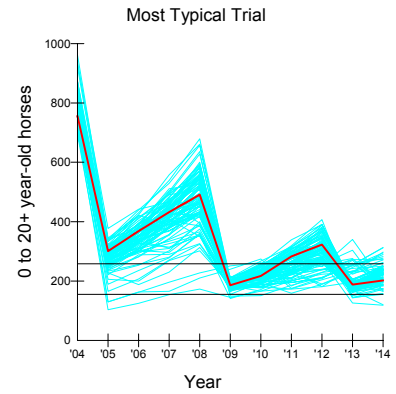
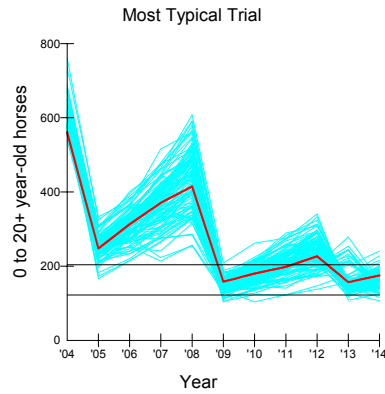
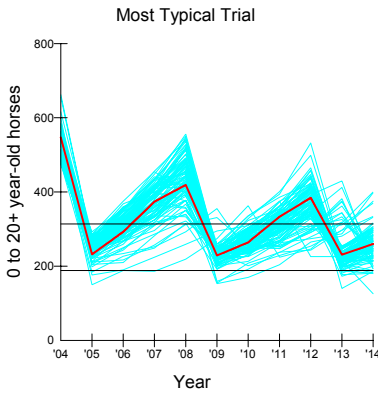


Granite Range HMA populations, Alt 1

The results of the average growth rate based on the management scenario for Alternative 1, Proposed Action, incorporate animal removals in addition to fertility-control applications on a 4-year gather schedule over a ten year period. Modeling results for the median average growth rate of wild horse populations within the Buffalo Hills HMA is 12.4%; the Fox-Lake Range HMA, 10.4%; and the Granite Range HMA, 12.8%.

### **Alternative 2, Gather to Low AML without Fertility Control**

Displayed in the graphs below are the most typical (median) trials (dark line) of the 100 simulations (lighter lines) based on Alternative 2 by HMA. Horse populations are modeled over ten years on a 4-year gather cycle, the same as the Proposed Action, however, no fertility treatments are administered. Results indicate wild horse populations may be maintained between the high and low AML range (black horizontal lines) if removals occurred on a regular basis or if a shorter gather cycle (three years instead of four) was implemented. Additionally, graphs show the range of population values based upon 100 simulation runs. It is important to note that none of the populations crash over the ten year time period.

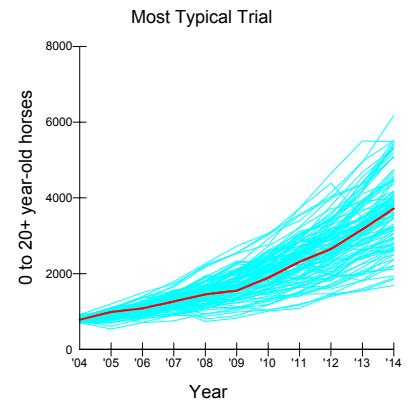
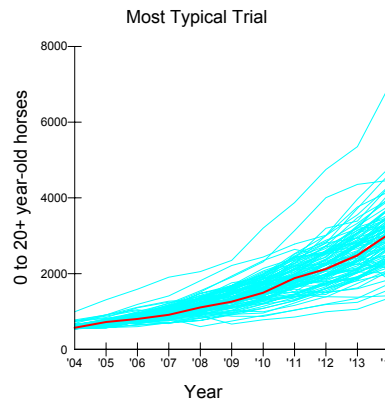
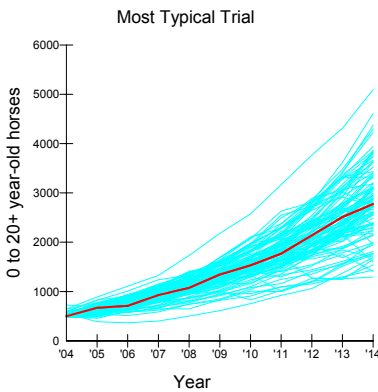


Buffalo Hills HMA populations, Alt. 2    Fox-Lake HMA populations, Alt. 2    Granite Range HMA populations, Alt 2

The results of the average growth rate are based on the management scenario for Alternative 2 of animal removals only on a 4-year gather schedule over a ten year period. Modeling results for the median average growth rate of wild horse populations within the Buffalo Hills HMA is 20.1%; the Fox-Lake Range HMA, 18.7%; and the Granite Range HMA, 19.2%.

### **Alternative 3, No Action**

Displayed in the graphs below are the most typical (median) trials (dark line) of the 100 simulations (lighter lines) based on the No Action alternative by HMA. Horse populations are modeled over ten years without management actions. Results indicate wild horse populations would quickly grow if unmanaged. Again, graphs show the range of population values based upon 100 simulation runs.



Buffalo Hills HMA populations, Alt. 3    Fox-Lake HMA populations, Alt. 3    Granite Range HMA populations, Alt 3

The results of the average growth rate as based on no management actions, Alternative 3, No Action, are as follows. The median average growth rate for unmanaged wild horse populations within the Buffalo Hills HMA is 18.3%; the Fox-Lake Range HMA, 17.6%; and the Granite Range HMA, 16.8%.

### **Population Modeling Summary**

To summarize the modeling results, the original questions can be addressed.

- Do any of the Alternatives “crash” the population?

None of the alternatives indicate that a crash is likely to occur to the populations. A crash would be represented by a drop in population numbers below a self-sustainable level, currently estimated at a herd size of 150 animals. A crash would be visualized in the graphs above by a drop in population numbers

below 150 animals with no recovery or growth in the population over time. Minimum population levels and growth rates are all within reasonable levels, and adverse impacts to the population are not likely.

- What effect does fertility control have on population growth rate?

As expected, the Proposed Action alternative implementing fertility control reflects the lowest overall growth rate. Populations appear to level out over time with regular removal/fertility treatments.

However, the percent of the population that is actually gathered may not allow enough treated animals to be released to be effective. This model used 90%. If treatments occur on enough animals, these results suggest gather cycles may be increased to more than four years once populations are stabilized.

Alternative 2 population results might be contained within the AML range if gather cycles are less than four years and removals are consistent (little deviation from the gather cycle). But, it is evident in the No Action alternative that horse populations quickly grow without management actions even though average growth rates are slightly less than those rates identified for Alternative 2.

- What effects do the different alternatives have on the average population size?

Effects are addressed in the previous question above and displayed in the graphs following each alternative.

**APPENDIX D**  
**Reference Material: EA# NV-020-00-50 Excerpts**

**Environmental Consequences (Proposed Action & Alternatives)**

(Page 15 and 16 of EA# NV-020-00-50).

**Wild Horses**

Impacts to wild horses under the proposed action or alternatives may occur to either individual animals or the population as a whole. These impacts include handling stress associated with the herding, capture, processing, and transportation of animals from temporary trap sites to temporary holding facilities, and from the temporary holding facilities to an adoption preparation facility. Following administration of the immunocontraceptive fertility control vaccines, minor swelling may occur at the injection site and/or an injection site injury may occur, however this is rare. The intensity of these impacts vary by individual, and are indicated by behaviors ranging from nervous agitation to physical distress. Mortality of wild horses captured during a gather does occur, however it is infrequent and typically is no more than one half to one percent of the animals captured.

Impacts which can occur after the initial stress may include spontaneous abortion in mares, and increased social displacement and conflict in studs. Spontaneous abortion following capture is very rare. Traumatic injuries that may occur typically involve biting and/or kicking that result in bruises and minor swelling which normally does not break the skin. These impacts are known to occur intermittently during wild horse gather operations. The frequency of occurrence of these impacts among a population varies with the individual.

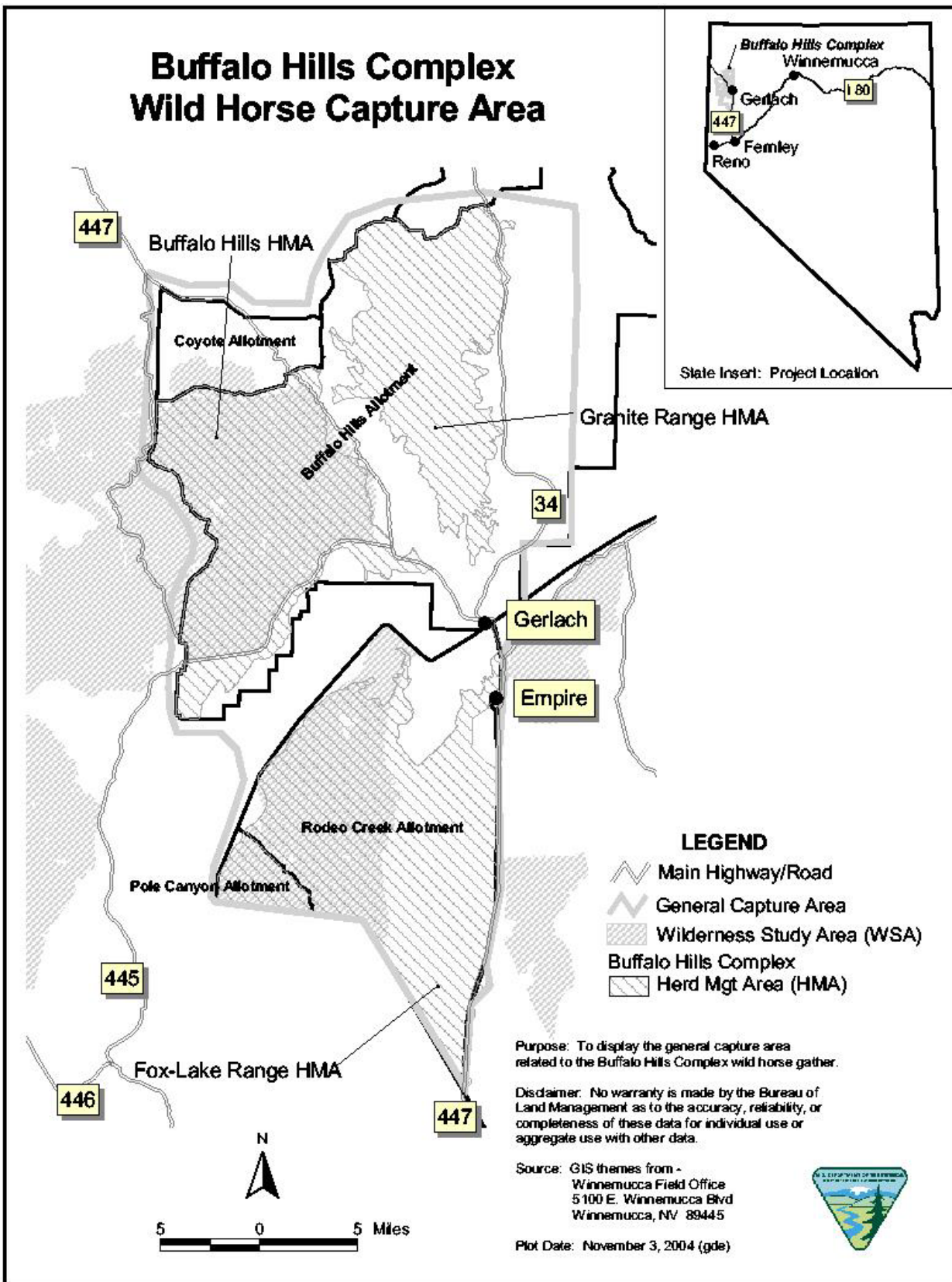
Population wide impacts can occur during or immediately following implementation of the proposed action or alternatives. They include the displacement of bands during capture and the associated re-dispersal, modification of herd demographics (age and sex ratios), temporary separation of members of individual bands of horses, reestablishment of bands following releases, and the removal of animals from the population. With the exception of changes to herd demographics, direct population wide impacts over the last 20 years have proven to be temporary in nature with most if not all impacts disappearing within hours to several days of release. No observable effects associated with these impacts would be expected within one month of release except a heightened shyness toward human contact. Observations of animals following release have shown horses relocate themselves back to their home ranges within 12 to 24 hours of release.

The effect of removing wild horses from the population would not be expected to have a significant impact on herd dynamics or population variables as long as the selection criteria for removal ensured a "typical" population structure was maintained. Obvious potential impacts on horse herds and populations from exercising poor selection criteria not based on herd dynamics includes modification of age or sex ratios to favor a particular class of animal.

The proposed action would mitigate the potential adverse impacts on wild horse populations by establishing a procedure for determining what selective removal criteria is warranted for the herd. This flexible procedure (Appendix II SOP's) would allow for correction of any existing discrepancies in herd demographics which could predispose a population to increased chances for catastrophic impacts. The proposed action would also establish a standard for selection

which would minimize the possibility for developing negative age or sex based selection effects to the population in the future.

Population wide indirect impacts would not appear immediately as a tangible effect and are more difficult to quantify. Population wide indirect impacts are associated primarily with the use of fertility control drugs and involve reductions in short term fecundity of initially a large percentage of mares in a population, increasing herd health as AML's are achieved, and potential genetic issues regarding the control of contributions of mares to the gene pool, especially in small populations. Again, with implementation of the proposed action, these impacts would be expected to be mitigated by an overall lessening of the need to impose fertility control treatments on a high proportion of the mare population, and all mares would be expected to successfully recruit some percentage of their offspring into the population.



Map 1: Buffalo Hills Complex Map